IN THE SPECIFICATION

Please amend Paragraph 63 as follows:

[63] The number of errors NBE is compared ("<" and ">"), in comparison means CMP2, with a high threshold SH1 and with a low threshold SB1. The values of the high and low thresholds, SH1 and SB1, will be determined by the person skilled in the art as a function for example of the envisaged application and of the type of memory used.

Please amend Paragraph 64 as follows:

[64] The output of the comparison means CMP2 is linked to the input of decision logic MRG which acts as means for regulating the refresh period Tref. More precisely, in a general manner, if the number of errors NBE is less than ("<") the low threshold SB1, the refresh period Tref is increased. If this number of errors is greater than (">") the high threshold SH1, this period is decreased. If it is less than or equal to the high threshold and greater than or equal to the low threshold, the refresh period Tref is left unchanged.

Please amend Paragraph 65 as follows:

[65] Hardware-wise, this can be achieved by a multiplexer MUX2 controlled by the regulating signal SRG emanating from the means MRG. This multiplexer MUX2 possesses three inputs. The middle input is linked to the output of the register RGT2 which contains the value of the refresh period Tref. Another input of the multiplexer is linked to the output of an adder ("+"). Such an adder possesses a first input linked to the output of the register RGT2 and a second input linked to a constant CH. The multiplexer MUX2 also possesses a third input linked to the output of a

subtractor ("-"). This subtractor possesses a first input linked to the output of the register RGT2 and a second input linked to a constant CB. The output of the multiplexer MUX2 is linked to the input of the register RGT2.

Please amend Paragraph 67 as follows:

[67] This said, two other registers are also provided, respectively comprising a lower limit value SB2 and a limit value SH2 for the refresh period Tref. Also, the regulating of the refresh period just described is applied while the refresh period lies between these two limit values SB2 and SH2. On the other hand, if the refresh period is less than ("<") the limit value SB2, the regulating of the refresh period can only take the form of an increase in the refresh period. Likewise, if the refresh period is greater than (">") the limit value SH2, then the regulating of the refresh period can only take the form of a decrease in the refresh period. In practice, on initialization, a refresh period corresponding to the maximum refresh frequency having regard to the worst temperature case will be chosen. This initial value of the period then corresponds to the minimum limit value SB2. By way of indication, for a temperature of 85°C, the worst case retention time corresponds to 32 ms.

Please amend Paragraph 73 as follows:

[73] On entry to the standby mode, the first page of the memory is used as test page (Ntest equals zero; step 30). In this way, a first of a successive number of groups of cells in memory is selected for retention time testing. The variables N, P and q are also initialized to zero (step 31). As indicated hereinabove, the refresh period Tref is set to the minimum value, corresponding to the maximum temperature of use of the system. In

step 32, PT1 is written to word P of the buffer memory CHO, and then P is incremented by 1 (P=P+1). A test is then made to see whether $P < Pmax$. If so, step 32 is repeated. When P is equal to Pmax, that is to say when all the test words have been written to the buffer memory CH0 (step 32), the content of the first buffer memory CH0 is transferred (step 33) into the test page of the memory MMV (i.e., write CHO to test page). Thus, predetermined test content has been written to the selected cells.

Please amend Paragraph 74 as follows:

[74] As Ntest is equal to zero (see, step 33 test $Ntest \neq 0$), we go directly to step 35, in which N is incremented by one unit (N=N+1) and then we proceed, in step 36, to the periodic refreshing of all the other pages of the random access memory. Thus, in step 36, page N is refreshed, and then N is incremented (N=N+1). A test is then made in step 36 as to whether T=Tref and $N \leq Nmax$. If so, step 36 is repeated. This operation effectuates a successive refreshing of unselected cells in the memory. If, on the other hand, T=Tref and $N > Nmax$, the process moves on to step 37. Thereafter, N is reinitialized to zero (N=0) in step 37 and q is incremented (q=q+1).

Please amend Paragraph 75 as follows:

[75] Since q is less than Q ($q < Q$ in step 37 test; here taken equal for example to be Q= 2), we return to step 35 and proceed to a second of successive refreshings of the pages of the memory other than the test page. At least two refreshings of unselected cells occur between successive test content writing/reading operations. If, on the other hand, $q < Q$ and Ntest=0, then the process returns to step 34. When q is equal to Q (q=Q)

we then proceed on to step 38 and to the "refreshing" of the test cells of the test page. In fact, here the term "refreshing" is used improperly in respect of a test cell although it is not in reality a refreshing. More precisely, in step 38 the content of the test cells is read and stored in the second buffer memory CH1 ("transfer test page into CH1" and set "P=0") and then in step 39 the content of the buffer memory CH1 is read ("read word P from CH1" and increment P "P=P+1"). A test is made in step 39 as to whether P<Pmax. If so, step 39 is repeated. When P=Pmax, the process moves on to step 40.

Please amend Paragraph 76 as follows:

[76] We then proceed, within step 39, to the counting (or metering) of the reading errors ("count errors"), by comparing the content thus read with the test content PT1. This process of counting errors in effect performs a measurement on the selected group of cells as to retention, and thus permitted refresh rate. The counting of errors occurs less frequently than the refresh frequency for the non-selected cells. What in effect results is a measurement of a retention time of the selected cells. When errors occur and are counted, the retention time for those cells has been exceeded. Since successive numbers of groups are selected, then over time corresponding successive measurements of retention time are performed. The count represents an accumulation of the number of errors.

Please amend Paragraph 80 as follows:

[80] Next, Ntest is incremented by one unit (step 41) so that the page having the address 1 in the memory becomes in its turn the test page. In this way, a next one of a successive number of groups of cells in

memory is selected for retention time testing. One then proceeds to a backup (step 42) of the content of the new test page, for example here by transferring its content into the page with address zero. Such a backup can be made to a predetermined part of the memory or to an external backup memory. Next, after having reinitialized the variables N and q to zero (step 43), we return to step 33 in which the new test page is loaded with the test content PT1 ("write CHO to test page").

Please amend Paragraph 80 as follows:

[80] For a test page having the address Ntest different from zero (Ntest≠ 0), steps 34, 35, 36 and 37 are performed in succession, during which we proceed to a refreshing of the pages of the memory other than the test page. In other words, a successive refreshing of the non-selected cells is performed. In step 34, page N is refreshed and N is incremented by 1 (N=N+1). A test is made in step 34 as to whether T=Tref and N<Ntest. If so, step 34 is repeated. When T=Tref and N=Ntest, the process moves on to step 35 (described above). Then, since Q is greater than or equal to 1, one or more refreshings of the memory are again performed (as a function of the number Q) with the exception of the test page. Next, on completion of these refreshes, and after having performed the transfer 38 of the content of the test page into the buffer memory CH1, we again proceed to the counting of the errors related to the reading of this test page an hence measuring the retention time of the cells. Moreover, this new number of errors is accumulated with the previous number of errors corresponding to the previous test page.

Please amend Paragraph 87 as follows:

[87] The variant of the invention illustrated diagrammatically in FIGURE 4 makes it possible to reduce the refresh frequency and hence the consumption in standby mode, even at maximum operating temperature. The principle of this variant comprises tagging, in the course of the first cycle of regulation of the refresh period of the memory, the pages having the least retention, of labeling them as "low" (step 45) and, in the next regulating cycle, of subsequently refreshing them more often than the others (step 46). Specifically, generally, more than 90% of the pages of the memory can be refreshed 2 to 4 times less often than is necessary for the cells of minimum retention. Several modes of implementation of this variant are possible.

Please amend Paragraph 93 as follows:

[93] There is accordingly disclosed an apparatus and a process for refreshing a dynamic random access memory. The retention time of all the memory cells of the memory is continuously and dynamically measured. The refresh period Tref of the memory is continuously and dynamically regulated based on the result of those measurements. With respect to continuously and dynamically measuring the retention time of all the memory cells, different groups of cells (sub-sets) of the memory are successively selected (see, states 30 and 41) by FSM and DCDL in such a way as to scan the entire set of cells of the memory (using the incremented index Ntest). For each successively selected group of cells, MAT makes a retention time measurement by writing predetermined test content to the selected group of cells (using MUX1), reading the selected group of cells after a delay period (using DO), and metering the read test content for content errors (see, states 33-35 and 37-39) using LCG. The number of accumulated reading errors is measured by RG2. The delay period occurs

while successive refreshes continue to be performed with respect to the unselected cells (see, state 36) by CTLN and RF. Thus, the successive measurement operation performs measurements on the selected group of cells at a lower measurement frequency than a refresh frequency of the unselected cells of the memory such that each selected group of cells is refreshed more slowly (i.e., with a longer refresh rate) than unselected cells of the memory (which are refreshed at, for example, the current refresh rate of the array). For example, using the index Q and q, refreshing the unselected cells of the memory occurs at least twice in between the writing of the test content to the selected group of cells and the reading of the selected group of cells (see, state 39). Prior to testing a selected group of cells, the content of the selected group of cells is backed up (see, state 42). Following completion of the metering of the number of content errors, the content of the selected group of cells is restored with the backed up content (see, state 40). First and second buffers CH0 and CH1 function to store the test content (see, state 32) and the read content of the selected group of cells (see, state 38).

[94] With respect to continuously and dynamically regulating the refresh period, the comparator CMP2 compares the metered number of accumulated errors with a low threshold and a high threshold (SH1 and SB1). In the event the metered number of accumulated errors is less than the low threshold, the refresh period is increased (i.e., adjusted, such that the rate decreases) by MRG, MUX2, RGT2 and CH. If the metered number of accumulated errors is greater than the high threshold, the refresh period is decreased (i.e., adjusted, such that the rate increases) by MRG, MUX2, RGT2 and CH. In a third case, if the metered number of accumulated errors is greater than or equal to the low threshold and less than or equal to the high threshold then the refresh period is not modified

by MRG, MUX2 and CH. Minimum and maximum values for the refresh period are set by SH2 and SB2.

[95] Although preferred embodiments of the method and apparatus of the present invention have been illustrated in the accompanying Drawings and described in the foregoing Detailed Description, it will be understood that the invention is not limited to the embodiments disclosed, but is capable of numerous rearrangements, modifications and substitutions without departing from the spirit of the invention as set forth and defined by the following claims.

The foregoing amendments to the specification are asserted by Applicants to be fully supported by the text of the application as filed, including the claims, as well as the illustrations of the invention set forth in the Drawing figures. More specifically, support for the amendments made to the specification are supported by Figures 2-4 of the application as originally filed as well as claims 1-42 of the application as originally filed. No new matter has been added.